Amendments to the Specification:

Please replace the paragraph beginning on page 1, line 9, with the following amended paragraph:

The present application is a divisional of U.S. Patent Application No. 09/883,096, filed June 15, 2001, which is a continuation-in-part of ~~USSN~~ U.S. Patent Application No. 09/594,655, filed June 15, 2000, both of which ~~is~~ are incorporated by reference in ~~its~~ their entirety for all purposes.

Please replace the section beginning on line 5 of page 5 with the following amended section:

BRIEF DESCRIPTION OF THE DRAWINGS

~~Figure 1 shows~~ Figures 1A-1F show a nucleic acid sequence and amino acid sequence of HsKip3a (SEQ ID NO:1 and 2). The motor domain corresponds to amino acids 5-348 or bases 143-1174 (boxed and bolded sequences indicate the beginning and end of this region, respectively).

~~Figure 2:~~ Figure 2 shows a nucleic acid sequence encoding a motor domain fragment of HsKip3a (SEQ ID NO:3).

Figure 3 shows the amino acid sequence of the motor domain fragment shown in Fig. 2. (SEQ ID NO:4).

Figure 4 shows the amino acid sequence of the Kip3a fragment used in the ATPase assay. ~~Grayed~~ The boxed sequence is derived from the vector (pCRT7/CT, Invitrogen) and contains a V5 epitope and polyhistidine tag (SEQ ID NO:5).

Figure 5 shows the nucleic acid sequence encoding the amino acid sequence shown in ~~Figure 4 (SEQ ID NO:6)~~. Figure 4. The boxed sequence is derived from the vector (pCRT7/CT, Invitrogen) and encodes a V5 epitope and polyhistidine tag (SEQ ID NO:6).

Figure 6 shows data from an ATPase assay of the motor domain fragment shown in Figure 4.

~~Figure 7 shows~~Figures 7A-7D show expression profiles of HsKip3a in different tissues.[[:]]

Please replace the paragraph beginning on page 19, line 1 with the following rewritten paragraph:

The novel ~~nucleotides~~ nucleotide sequences provided herein encode HsKip3a or fragments thereof. Thus, in one aspect, the nucleic acids provided herein are defined by the novel proteins provided herein. The protein provided herein comprises an amino acid sequence which has one or more of the following characteristics: greater than 70% sequence identity with SEQ ID NO:2 or SEQ ID NO:4, preferably greater than 80%, more preferably greater than 90%, more preferably greater than 95% or, in another embodiment, has 98 to 100% sequence identity with SEQ ID NO:2 or SEQ ID NO:4. As described above, when describing the nucleotide is terms of SEQ ID NO:1 or SEQ ID NO:3, the sequence identity can be the same percentages or slightly lower due to the degeneracy in the genetic code. The invention also includes fragments of the nucleotide sequence shown in ~~Fig. 1~~ Figs. 1A-1F having at least 10, 15, 20, 25, 50, 100, 1000 or 2000 contiguous nucleotides from SEQ ID NO:1 or a degenerate form thereof. Some fragments include the motor domain which occurs approximately between positions 5 and 348 of the amino acid sequence in ~~Fig. 1~~ Figs. 1A-1F (determined by sequence comparison of the motor domain of the other kinesins). Some such fragments can be used as hybridization probes or primers. Unless otherwise apparent from the context, reference to nucleotide sequences shown in the ~~Figures~~ figures or sequence can refer to the sequence shown, its perfect complement or a duplex of the two strands. Also included within the definition of target proteins are amino acid sequence variants of wild-type target proteins.

Please replace the paragraph beginning at page 21, line 1, with the following rewritten paragraph:

Some portions or fragments of HsKip3a include at least 7, 10, 15, 20, 35, 50, 100, 250, 300, 350, 500, or 1000 contiguous amino acids from the sequence shown in ~~Fig. 1~~ Figs. 1A-1F. Some fragments contain fewer than 1000, 500, 250, 100 or 50 contiguous amino acids from the

sequence shown in ~~Fig. 1~~ Figs. 1A-1F. For example, exemplary fragments include fragments having 15-50 amino acids or 100-500 amino acids. Some fragments include a motor domain. The motor domain runs from about amino acid 5 to 342-354. Such fragments typically include the span from amino acid residue 5-342, 5-348, 5-353, or 5-354 of ~~Fig. 1~~ Figs. 1A-1F or an active portion thereof. Some fragments include amino acids 26-354 of ~~Fig. 1~~ Figs. 1A-1F. Some fragments include a ligand binding domain of HsKip3a. Nucleic acids encoding such fragments are also included in the invention.

Please replace the paragraph beginning on page 51, line 1, with the following rewritten paragraph:

The kinesins of ~~their~~ the invention and in particular their motor domains can also be used in the field of nanotechnology. Molecular motors such as kinesin have widespread application in the construction of nanoscale machines ~~<http://clinton4.nara.gov/media/pdf/ch7.pdf>~~. Biomolecular motors have real-world application in the emerging nanotechnological arts. For example, a 1999 NASA study identifies multiple applications for nanoscale motors - and kinesin in particular - in the aerospace field. ~~See<~~ ~~http://www.nas.nasa.gov/~globulus/papers/NanoSpace1999/paper.html>~~. Kinesin motor domains can be used in the construction of rotors and other mechanical components (for review see Limberis and Stewart, Nanotechnology 11:47-51 (2000)) as well as light-operated molecular shuttles useful for nanoscale switches and pumps ~~(see~~ ~~<http://www.foresight.org/Conferences/MNT8/Abstracts/Vogel/>~~.

Please replace the paragraph beginning on line page 54, line 4 with the following amended paragraph:

The expression profile of Kip3a in various tissues is shown in ~~Fig. 7~~Figs. 7A-7D. Abbreviations are as follows: